# HYGIENE AND PUBLIC HEALTH.

UNDER THE CHARGE OF
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**Pathogenic Organisms in Milk.**—Finding enormous numbers of streptococci in a specimen of milk which had presumably been the cause of sickness in an infant, DR. D. H. BERGEY (*American Medicine*, April 20, 1901, p. 122) was led to examine specimens from other first-class dairies and obtained the same results in each case. These facts suggested questions as to the extent to which streptococci are present in the milk of healthy cows, whether they are more prevalent in that of herds kept under bad sanitary conditions, and as to their significance. Examination of a number of specimens gave positive results in some and negative in others. The organisms were found somewhat more frequently in the milk of cows kept under unsanitary conditions, but the differences were not very marked. Of 40 samples of market milk, 36 (90 per cent.) yielded micrococci, and 20 (50 per cent.) yielded streptococci. Of 16 samples of mixed milk from one of the best dairies, only 1 yielded streptococci. Of 28 from another, 5 gave micrococci, but no streptococci. Fifteen samples from two other first-class dairies yielded streptococci in only two instances, but 11 contained micrococci. Eight samples from individual cows of first-class dairies, injected into the peritoneal cavities of guinea-pigs, caused death in three cases, and in each of these *Staphylococcus pyogenes aureus* was isolated from the organs. No streptococci were found. As to the significance of the presence of streptococci in the milk of healthy cows, nothing definite can be stated, but, judging from the results of experiments by Beck, Dr. Bergey believes it most probable that these organisms are not infrequently the cause of serious gastro-intestinal disorders in infants, and that this source of infection should always be taken into consideration when the cause of the sickness is not at once apparent. He advises that dairy owners should be cautioned regarding the danger arising from the hands of milkers having even slight lesions, since the entrance of such bacteria will, under favoring conditions of temperature, be followed by enormous multiplication.

During the first months of 1900, DR. E. KLEIN (*Journal of Hygiene*, January, 1901, vol. i., No. 1, p. 78) examined 100 samples of milk, taken in sterilized bottles from vessels directly from the country, primarily to determine whether or not any contained the bacillus of tuberculosis. This organism was found in 7 specimens, but in the course of the investigation other pathogenes were detected, as follows: *B. pseudotuberculosis* in 8; *B. diphtheriæ* in 1, and a pathogenic torula, which produced a fatal disease of a chronic nature, in another. From the secretions of certain diseased udders he isolated 2 pyogenic bacteria—*B. diphtheroides* and *Streptococcus radiatus* (*pyogenes*).

Under orders from the Minister of Agriculture to the Hygienic Institute of the Berlin Veterinary College, the head thereof, OSTERTAG (*Zeitschrift für Fleisch und Milchhygiene*, ix., pp. 168 and 221) undertook an investigation of the virulence and specific bacterial content of milk of cows which, though reacting to tuberculin, show no clinical evidence of tuberculosis. Separate samples and the mixed milk of 50 cows were tested by bacteriological examination, intraperitoneal inoculation of cream sediment, and feeding experiments with guinea-pigs, of which animals, during the inquiry, no less than 526 were used. Individual samples from 49 cows which simply reacted to tuberculin yielded no bacilli. From his results Ostertag concludes that the mixed milk of larger herds which react without clinical evidence of the disease may by chance contain bacilli without being able, to any noteworthy extent, to produce tuberculosis by ingestion; and, further, that the milk of cows which give no clinical evidence may be considered as quite harmless. But with the milk of those with affected udders and of those which have become emaciated, the case is quite different. In no secretions of tuberculous cows are the bacilli so numerous as in that of the tuberculous udder. The most important measure for the prevention of dissemination of tuberculosis through the agency of milk is the weeding out of all cows with involved udders and of those which show emaciation, and this should be done by fortnightly veterinary examination. DR. LYDIA RABINOWITSCH (*Deutsch medicinische Wochenschrift*, 1900, No. 26, p. 416) reports absolutely negative results of examinations of mixed milk of large herds tested with tuberculin, while that of other herds which were under clinical supervision yielded, in a number of instances, virulent tubercle bacilli, which result emphasizes the great sanitary value of the tuberculin test.

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**Studies in Relation to Malaria.**—DRS. G. H. F. NUTTALL, COBBETT, and T. STRANGEWAYS PIGG (*Journal of Hygiene*, January, 1901, p. 4) have made an extensive search for Anopheles in various parts of England, during which they collected specimens from no less than 173 localities, in many of which malaria has never existed at any time. Three species are found, the most prevalent being, as elsewhere, *A. maculipennis*. All three (*A. maculipennis*, *A. bifurcatus*, and *A. nigripes*) are to be found in all districts which were formerly malarious, as well as in others with no history of the disease. The investigations lead the authors to the conclusion that "the coincidence of the geographical distribution of ague and *Anopheles* as claimed by Grassi for Italy, and as probably holding good for other parts of the world, is hereby disproved for England, and consequently the generalizations are proved to be premature whereby he excludes other blood-sucking insects from being possible hosts of malarial parasites on the strength of this geographical agreement." Also, "the disappearance of ague from Great Britain does not depend upon the extinction of mosquitoes capable of harboring the parasites of malaria." Since the geographical distribution of Anopheles in England is wider than the former prevalence of malaria there, they conclude that numerical distribution of the insects is of greater importance than the geographical. The occasional occurrence of ague in out-of-the-way places can, they believe, be explained by the existence of *Anopheles* in non-malarious districts without assuming the importation of infected mosquitoes from abroad, for the local insects may become infected by biting a malarious subject coming from other parts and then may infect healthy persons. The disappearance in England of ague depending not upon the extinction of *Anopheles*, is probably due to several causes operating together, namely, reduction in the number of the insects due to drainage of the land; reduction of the population of infected districts owing to emigration, thus reducing the number of infected persons who could infect the *Anopheles;* and the reduction of the chances of infecting the *Anopheles* through checking, by the use of quinine, the development of the parasites in the blood of infected subjects.

**Canned Meats.**—From a series of experimental observations on the canning of meats, DRS. BISCHOFF and WINTGEN (*Zeitschrift für Hygiene und Infectionskrankheiten*, xxxiv., p. 496) conclude that penetration of heat into the interior of the meat is uneven and not wholly dependent upon the size of the pieces. The condition of the meat, whether fatty or not, whether compact or fissured, is of much importance, as is also the amount of liquid in the can. The fissures are in part caused by the cooking, which converts the connective tissue to gelatin and brings about a contraction of the muscle substance. Evenness of quality, depending upon the age of the animal, the shape of the piece, and amounts of fat and connective tissue, is not easily controlled. In consequence of the high temperature necessary for complete sterilization, the meat becomes more or less stringy, according to the nature of the piece. Absolute sterility is obtained at different temperatures under varying conditions. The best results are obtained with cans containing 600 and 200 grammes by heating at 120.5° C. for seventy and fifty minutes respectively, the meat being tender, though somewhat stringy, and absolutely sterile.

Canned meats are not the equals of fresh meats as used in the household, but are to be preferred for use by troops in the field to that of freshly killed animals, consumed without undergoing any process of ripening. Moreover, they possess the advantage of easy transportation and quick preparation for use as needed.

**Alcohol and Susceptibility to Infection.**—The results of an extensive series of experiments on the influence of alcohol on susceptibility to infection, conducted by DR. TAAV. LAITINEN (*Zeitschrift für Hygiene und Infectionskrankheiten*, xxxiv., p. 206) lead to the conclusion that under all conditions alcohol causes a distinctly increased susceptibility to experimental infection, whether it is given before or after or both before and after the introduction of the infective material, and whether it is given in a few large doses or in numerous small doses over a longer time, and whether with acute or chronic infections or pure intoxication. The animals (dogs, rabbits, guinea-pigs, fowl, and pigeons) employed received the diluted alcohol either by the mouth or injected under the skin.

The favoring influence of alcohol on the different morbid processes showed itself in the fact that the affection terminated fatally in the alcoholized animals, the controls being unharmed, or that at least the fatal result was appreciably hastened when both succumbed. With rabbits inoculated with anthrax bacilli of diminished virulence, the former was the case; with guinea-pigs treated with diphtheria toxin, the latter was observed.

Alcohol was administered to a number of pregnant guinea-pigs for some days. Some aborted toward the completion of term; others gave birth to living young. The majority of the latter died before the tenth day, but those from mothers which had received but small doses remained alive longer. The survivors when experimented upon with diphtheria toxin showed a distinctly increased susceptibility in comparison with animals of equal age, the offspring of non-alcoholized mothers.

Observations of temperature showed no differences when the alcoholized animals had not been infected, excepting when such large amounts were given that the animal was almost in convulsions, when a decided fall was observed. After infection the alcoholized animals showed elevated temperature appreciably longer than the controls (averages, twenty-seven and twenty-four days respectively). The results of the research as a whole hardly justify the employment of alcohol in the treatment of infectious diseases in man.

**Disinfection of Tuberculous Sputum.**—According to DR. DONATO OTTOLENGHI (*Zeitschrift für Hygiene und Infectionskrankheiten*, xxxiv., p. 259) corrosive sublimate 5 : 1000, 7.5 : 1000, or 8 : 1000, with or without the addition of hydrochloric acid or salt, will disinfect dried tuberculous sputum with certainty when sprayed upon it, as will also a 10 per cent. lysol solution, but a 10 per cent. milk of lime is without effect. Formalin in 10 per cent. strength and chloride of lime in the same strength in powder form are ineffective against dried sputum. Chloride of lime in solution, however, appears to diminish somewhat the virulence.

Lysol, though equally effective with corrosive sublimate, is not equally available, on account of its much higher cost. Corrosive sublimate must be employed at least as strong as 5 : 1000, and the spraying must be carried out with a generous hand. When a room containing dried sputum is disinfected in this way, it should be tightly closed for some time after being sprayed, and all draughts prevented in order to prevent rapid drying of the sprayed surfaces.

The lessened efficiency of aqueous sublimate solutions with lapse of time and exposure to light can be prevented by the addition of a moderate amount of salt or of hydrochloric acid—not more than two molecules of salt to each of sublimate; thus, 2.16 grammes of salt to a 5 per mille solution.

In recommending sublimate as a room disinfectant, the matter of possible injury must be considered. Danger to future occupants has been repeatedly pointed out, and mercury has been detected in the urine of persons who have occupied for some months rooms that had undergone sublimate disinfection.

**Plague and Rats.**—A report on the epidemic of plague in Kobe and Osaka by Dr. Kitasato and others, abstracted by DR. M. J. ROSENAU (*Public Health Reports*, April 5, 1901), states that in two and one-half months the authorities of Kobe paid for 20,000 and of Osaka for 15,000 rats brought in dead or alive. Many more were found dead and disposed of without any claim for the official reward of 5 sen (about 2.5 cents) per head, because of the fear of compulsory disinfection that followed the finding of the dead animals. About a fifth of those found dead in Kobe and a tenth in Osaka were infected with *B. pestis*.